1-9: Notation for Recursive Formulas

Warm-up:

1. a. What number comes after 5? Before 5? How did you determine your answers?

b. What number comes after n? Before n? How did you determine your answers?

2. Matt Mitarnowski has to repay a $300 loan, and he makes $30 payments each month for n months.

a. Write a recursive formula for the sequence.

b. Find the first 5 terms.

Question: Since using the "previous term" is not a very mathematical thing to do, what can we do instead?

Example 1: Rewrite the following recursive formula mathematically correct, then find the first four terms.

$$\begin{cases} t_1 = 50 \\ t_n = 1.05(\text{previous}), \text{ for int. } n \geq 2 \end{cases}$$

Example 2: Find the first 5 terms of the sequence.

$$\begin{cases} h_1 = 14 \\ h_n = 2h_{n-1} + 3, \text{ for int. } n \geq 2 \end{cases}$$

Example 3: Find the first 4 terms of the sequence.

$$\begin{cases} w_1 = 4 \\ w_n = 3w_{n-1} - n, \text{ for int. } n \geq 2 \end{cases}$$

Example 4: Find the first 6 terms of the sequence.

$$\begin{cases} g_1 = 4 \\ g_2 = 6 \\ g_n = 2g_{n-2} + g_{n-1}, \text{ for all int. } n \geq 2 \end{cases}$$

Homework:

"In terms of being late or not starting at all, then it's never too late." - Alison Headley